

REMARKS

Applicants appreciate the Examiner's thorough consideration provided in the present application. Claims 1, 2, 4, 7-10 and 12-24 are now present in the application. Claims 1, 9, 21, 22 and 24 have been amended. Claims 1 and 9 are independent. Reconsideration of this application, as amended, is respectfully requested.

Reasons For Entry Of Amendments

As discussed in greater detail hereinafter, Applicants respectfully submit that the rejections under 35 U.S.C. § 103 are improper and should immediately be withdrawn. Accordingly, the finality of the Final Office Action mailed on March 12, 2007 should be withdrawn.

If the Examiner persists in maintaining his rejections, Applicants submit that this Amendment was not presented at an earlier date in view of the fact that Applicants are responding to a new ground of rejection set forth in the Final Office Action. In accordance with the requirements of 37 C.F.R. §1.116, Applicants respectfully request entry and consideration of the foregoing amendments as they remove issues for appeal.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 2, 4, 9, 10 and 12-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over von Gutfeld et al., U.S. Patent No. 6,055,035 (hereinafter "Gutfeld"), in view of Paton et al., U.S. Patent No. 4,018,383 (hereinafter "Paton"). Claims 7 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gutfeld in view of Paton, and further in Birch, Stewart, Kolasch & Birch, LLP

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view of Masazami et al., U.S. Patent No. 6,331,884 (hereinafter “Masazami”). These rejections are respectfully traversed.

Complete discussions of the Examiner’s rejections are set forth in the Office Action, and are not being repeated here.

In light of the foregoing amendments, Applicants respectfully submit that these rejections have been obviated and/or rendered moot. While not conceding to the Examiner’s rejections, but merely to expedite prosecution, as the Examiner will note, independent claims 1 and 9 have been amended.

Independent claim 1 has been amended to recite a combination of steps including “placing a resonating plate between a resonator and the projecting portion and outside of the projecting portion” and “applying an on voltage to the resonator during emitting of the liquid crystal material to generate a vibration so as to apply a pressure to the projecting portion to emit the liquid crystal material from the projecting portion, wherein the generated vibration is transmitted from the resonator to the projecting portion through the resonating plate.”

Independent claim 9 has been amended to recite a combination of elements including “a resonating plate located between the resonator and the projecting portion and outside of the projecting portion, for transmitting the vibration to the projecting portion so as to apply a pressure to the projecting portion to emit the liquid crystal material from the projecting portion.”

Support for the amendments to claims 1 and 9 can be found in FIG. 3 as originally filed. Applicants respectfully submit that the above combinations of steps and elements as set forth in independent claims 1 and 9 are not disclosed or suggested by the references relied on by the Examiner.

The Examiner referred to Gutfeld's apparatus 20 as the projection portion of claims 1 and 9. The Examiner has correctly acknowledged that Gutfeld fails to teach a resonator and a resonating plate as recited in the combination of claims 1 and 6 and in claim 9. However, the Examiner turned to rely on Paton's teachings and alleged that Paton's piezoelectric crystal 5/39 and impervious membrane 38 are the resonator and the resonating plate of the claimed invention, respectively.

In particular, Paton in col. 7, lines 54-58 discloses:

In order to assist in promoting the break-up of the jet of liquid into drops it is preferred that the piezoelectric crystal is in the form of a resonant component which is in contact with the liquid or *an impervious membrane which is itself in contact with the liquid*, and such an arrangement forms a further feature of the present invention. (Emphasis added).

In other words, if the impervious membrane is used, the *impervious membrane needs to be in contact with the liquid*. Therefore, when applying Paton's impervious membrane 38 to modify Gutfeld, Paton's impervious membrane 38 will be *inside Gutfeld's apparatus 20* (i.e., inside the nozzle fixture 21) in order to be in contact with the liquid crystal material. Therefore, the combination of Gutfeld and Paton fails to teach "*placing a resonating plate* between a resonator and the projecting portion and *outside of the projecting portion*" as recited in amended claim 1 and "*a resonating plate located* between the resonator and the projecting portion and *outside of the projecting portion*" as recited in amended claim 9.

With regard to the Examiner's reliance on Masazami, this reference has only been relied on for its teachings related to some dependent claims. This reference also fails to disclose the above combinations of steps and elements as set forth in independent claims 1 and 9. Accordingly, this reference fails to cure the deficiencies of Gutfeld and Paton.

Accordingly, none of the references relied on by the Examiner individually or in combination teach or suggest the limitations of independent claims 1 and 9. Therefore, Applicants respectfully submit that independent claims 1 and 9 and their dependent claims (at least due to their dependency) clearly define over the teachings of the utilized references.

In the alternative, the combination of Gutfeld and Paton also fails to teach “the resonating plate is free of contact with the liquid crystal material in the projecting portion” as recited in dependent claims 22 and 24.

In particular, the Examiner referred to Paton’s impervious membrane 38 as the resonating plate of the claimed invention. As mentioned, however, Paton in col. 7, lines 54-58 clearly discloses that the impervious membrane is in contact with the liquid. Therefore, when applying Paton’s impervious membrane 38 to modify Gutfeld, *Paton’s impervious membrane 38 will be in contact with the liquid crystal material* in Gutfeld’s nozzle fixture 21. Accordingly, the combination of Gutfeld and Paton fails to teach “the resonating plate is *free of contact with the liquid crystal material* in the projecting portion” as recited in dependent claims 22 and 24.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103 are respectfully requested.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently pending rejections and that they be withdrawn.

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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